WHAT IS CLAIMED IS:

1. A method of sending a data object through a communications network from a sender to a recipient via at least one network node comprising the steps of:

a. dividing the data object into a stream of data packets to be transmitted,

b. marking each data packet with a delivery time; and

c. discarding a said data packet en route when the delivery time cannot be met.

2. A method as claimed in claim 1 wherein the data object has associated therewith a descriptor, the descriptor providing information linking the data packets of the object.

3. A method as claimed in claim 2 wherein the descriptor further includes the decoding rate for the object.

4. A method as claimed in claim 3 wherein the descriptor further includes the delivery time information.

5. A method as claimed in claim 1 wherein step (a) includes the step of marking each packet with a first reference, common to all packets of the object and a second reference unique to that packet.

6. A method as claimed in claim 1 wherein the node calculates a delivery time slot for each packet received based on the decoding rate for the object and the transmission time required.

7. A method as claimed in claim 6 wherein the node determines a priority for the sending of the packet onward through the network in accordance with the delivery time slot.

8. A method as claimed in claim 7 wherein each data packet is marked with a precedence level, the node determining the priority in accordance with the precedence level as well as the delivery time slot.

9. A method as claimed in claim 7 wherein the node stores lower priority packets for future sending.

10. A method of creating synchronised time stamped multimedia objects comprising the steps of:

a. fragmenting the data objects into one or more data packets;

b. marking each data packet containing a part or full portion of a single multimedia object using a unique reference;

c. creating a link for related fragmented network data packets originating from the same multimedia object using an object reference before transmission;

d. stamping the data packets related to the object reference with a time reference marking the instance the data packet leaves a transmission node; and

e. attaching a precedence level of the object based on the object reference.

11. A method related to claim 10, further comprising the step of providing an object descriptor for each multimedia object to allow a means for higher entitiy software to specify a data object linking mechanism and to

synchronise multimedia objects delivered across network in a form of fragmented network data packets.

12. A method for scheduling the transmission time of multimedia objects comprising the steps of;

a. dividing the transmission time into frames based on an object decoding rate;

b. further dividing the transmission time within each frame of the multimedia object channel into time slots, the number of time slots being equivalent to dividing the transmission rate by the multimedia object decoding time;

c. forming a delivery time schedule of multimedia objects with a time stamp within the scheduled object delivery period or frame period;

d. computing a scheduled object delivery period which is equivalent to the maximum object group delay period allowable; and

e. re-scheduling objects that cannot be delivered within a current time slot to a later time slot.

13. A method as claimed in Claim 12, further comprising the step of dynamically changing the number of time slots per frame by adapting to a changing object decoding rate of the object descriptor and changes to the transmission speed of network link.

14. A method as claimed in claim 12, comprising the further steps of computing, allocating and de-allocating the number of time slots dynamically based on current frame by:

a. computing the number of time slots available for multimedia object delivery in the current object frame;

b. updating the transmission time slot reserved over buffered object data in both queue memory and cache memory of a stream connection;

c. de-allocating the time slots of a subsequent frame if transmission of intended multimedia objects cannot be delivered within the assigned frame period; and

d. allocating time slots accumulated from previous object frames if transmission of intended multimedia objects within the specified decoding time frame cannot be delivered within the assigned object frame.

15. A method according the Claim 12, further comprising the step of computing a queue buffer size required for a stream based on the maximum object group delay and maximum multimedia object size.

16. A method as claimed in claim 12, further comprising the step of calculating an elastic delay period for the arrival of multimedia objects based on the maximum object group delay, consisting of at least one of the following delays:

a. end to end delivery delay time for all objects at a value equivalent to the maximum object delay,

b. node re-transmission delay where the maximum object delay is at a value not more than the n multiples of the maximum object delay experienced at each intermediate node between sender and receiver; and

c. a queue buffer delay introduced by the queuing algorithm at each intermediate nodes where the maximum delay is based on the size of the queue buffer size divided by the minimum object size.

17. An apparatus for interconnecting an object streaming apparatus into existing network interconnection apparatus to control data traffic generated by the multimedia object streams comprising:

a. an ingress gateway to control entry of data packets into a network;

b. a content traffic exchange hop attached to legacy switching or a routing network component; and

c. an egress gateway to control the exit of data packets from the network and to stream content to end-users.

18. The apparatus as claimed in claim 17 wherein the ingress gateway comprises:

a. an object fragmentor to break up an object into smaller data packets suited for the payload size of the network delivery medium;

b. a timer used for performing a clocking function to emulate the decoding time of the object to be decoded by the end device;

c. an object marker to provides linking of network data payloads belonging to the same data object to be delivered;

d. a time slot divider to compute the transmission time of the object data fragmented in a number of data packets;

e. a time slot allocator to determine the exact time of delivery; and

f. a network packet formatting means.

19. The apparatus as claimed in claim 17 wherein the content traffic exchange hop and egress gateway comprise at least one of:

a. a network parameter mapper and decoder module arranged to check and encode headers of packetised multimedia objects , each header

including a precedence level, a time stamp of the multimedia object and the source and destination reference;

b. a network payload packetizer and de-packetizer arranged to encapsulate and assemble the object data from the data packets of same object received from and transmitted to the network layer;

c. an object stream scheduler arranged to register the decoding time for each data object stream received and to schedule the delivery time of the stream to be routed out of the node;

d. a data packet transmission scheduler arranged to schedule the transmission of a single multimedia object if transmission time allows the single multimedia object to be sent out in entirety;

e. a time slot re-scheduler arranged to re-allocate the sending time of objects to an earlier time slot if the objects failed to meet the real time requirement of the object stream;

f. a system time slot divider arranged to synchronise all object streams for re-transmission or re-routing; and

g. a time slot allocator to arrange to provide an exact delivery time of object streams leaving the node;

20. The apparatus as claimed in claim 17 further comprising a clocking mechanism at each host and routing node to synchronise with the multimedia object streams received and to schedule the transmission time of object streams at determined time slots.

21. The apparatus as claimed in claim 20 wherein the mechanism comprises:

a. a module arranged to determine the arrival of the first data packet belonging to an object based on a multimedia object reference;

b. a module arranged to compute and maintain a time table of all the streams based on the difference between the last sent object and the next scheduled transmission of object;

c. a module arranged to create a link list for the data packets received for all subsequent data packets belonging to the same object; and

d. a queuing module to put data packets in assigned time slots.

22. The apparatus as claimed in claim 17 further comprising means of avoiding network congestion and limiting short-term bandwidth utilisation peaks by delaying the transmission of data objects by using cache memory for data objects to meet real-time decoding at the end receiver.

23. The apparatus as claimed in Claim 22, further comprising means of providing synchronisation of object streams.

24. The apparatus as claimed in claim 17 further comprising means for moderating peak data by diverting object data of lower precedence to a cache memory .

25. The apparatus as claimed in claim 17 further comprising means for enabling a different traffic filter specification based on a generic method for allocation of bandwidth by dividing a real-time delivery window in terms of decoding frames into multiple time slots.